Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHANNES H.N. GIJRATH

Appeal No. 96-2276
Application 08/128,622[1]

ON BRIEF

Before BARRETT, LEE, and CARMICHAEL, Administrative Patent Judges.

LEE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 13-24. Claims 1-12 have been canceled.

References relied on by the Examiner

Ragland, Jr. (Ragland)	Patent 4,437,036	Mar. 13, 1984
Morrell	Patent 4,146,816	Mar. 27, 1979

The Rejections on Appeal

[1] Application for patent filed September 28, 1993.

Claims 14-22 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Ragland.

Claims 14-17, 21, 23 and 24 stand rejected under 35 U.S.C. § 103 as being unpatentable over Ragland.

Claims 18-20 and 22 stand rejected under 35 U.S.C. § 103 as being unpatentable over Ragland in view of Morrell.

The Invention

The invention is directed to a color display tube including an electron gun, a display screen, a shadow mask disposed between the display tube and the electron gun, and a four-sided support frame which holds the shadow mask. As disclosed in the specification, differences in thermal expansion of the mask and the frame result in bending or flexing of the frame without further deforming the shadow mask. Upon movement of the sides of the frame, the mask moves closer to or away from the screen.

Claim 13 reads as follows:

13. A color display tube comprising an electron gun for

> generating electron beams, a display screen for receiving said electron beams, a shadow mask disposed between said electron gun and said display screen, and a four-sided supporting frame for holding said shadow mask, the improvement comprising means associated with said supporting frame for preventing deformations of said shadow mask during operation of the display tube.

Opinion

We reverse the rejection of claims 14-22 under 35 U.S.C. § 112, second paragraph. We reverse the rejection of claim 13 under 35 U.S.C. § 102(b) as being anticipated by Ragland. We further reverse the rejection of claims 14-17, 21, 23 and 24 under 35 U.S.C. § 103 as being unpatentable over Ragland and claims 18-20 and 22 under 35 U.S.C. § 103 as being unpatentable over Ragland in view of Morrell.

The Indefiniteness Rejection

The examiner rejected claims 14-22 as failing to particularly point out and distinctly claim the subject matter which appellant regards as the invention. The examiner states that claim 14 is indefinite as "it is unclear as to how the support frame for the shadow mask can function to prevent inherent deformations of the shadow mask ... without deforming the shadow mask." (Answer, pg. 3).

We disagree with the examiner that the claims, when properly interpreted, must prevent inherent deformations of

the shadow mask, such as the deformations caused by uneven heating between the center and the sides of the shadow mask.

As disclosed in the specification, with reference to embodiments shown in Fig. 5a and Fig. 6, the support frame expands or contracts and bends. As a result, the frame shifts the shadow mask relative to the display screen. The frame makes these adjustments without further deforming the shadow mask. (Spec., pg. 7, lines 1-7, and pg. 9, lines 2-21).

We do not interpret the language "for preventing deformations" to mean preventing even the inherent deformations caused by uneven heating of the shadow mask. As is discussed in further detail below, we interpret the language "for preventing deformations" to mean preventing those deformations caused by interaction with the support frame.

Accordingly, the rejection of claims 14-22 under 35 U.S.C. § 112, second paragraph as being indefinite is reversed.

The Rejections over Prior Art

The examiner finally rejected claim 13 as being anticipated by Ragland. Claim 13 includes a means-plus-function clause. In In re Donaldson Co., 16 F.3d 1195, 1189,

29 USPQ2d 1850, 1845 (Fed. Cir. 1994) (in banc), the court of

Appeals for the Federal Circuit stated that:

> Per our holding, the "broadest reasonable interpretation" that an examiner may give means-plus-function language is that statutorily mandated in paragraph six. Accordingly, the PTO may not disregard the structure disclosed in the specification corresponding to such language when rendering a patentability determination.

Prior to identifying structures, materials, and acts described in the specification, which correspond to a particular means, however, the examiner should first determine if the recited function is even performed in the prior art reference. Here, the issue is whether the prior art discloses "preventing deformations of said shadow mask" as is recited in claim 13.

Although extraneous limitations should not be read into the claims from the specification, E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co., 849 F.2d 1430, 1433, 7 USPQ2d 1129, 1131 (Fed. Cir. 1988), claim limitations are always properly interpreted in light of the specification and prosecution history. See, e.g., Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861, 868, 228 USPQ 90, 94 (Fed. Cir. 1985). Here, we look to the specification to interpret the functional recitation of "preventing deformations of said shadow mask during operation of the display tube." The specification describes preventing deformations of the shadow mask with respect to two separate embodiments.

The first embodiment in the specification that describes preventing deformations of the shadow mask is found on pages 6 and 7, with reference to Fig. 5a. Here, the frame 20 is shown

in Fig. 5a with a slit 41 located in at least one side of the frame to which the mask is attached at points 42. (Spec., pg. 6, lines 26-29). The differences in thermal expansion between the mask and the frame result in the slit 41 becoming narrower or wider. (Spec., pg. 7, lines 1-5). The narrowing or widening of the slit 41 results in bending of the frame. (Spec., pg. 7, lines 5-6). The expanding or contracting and hence bending of the frame is said to be accomplished without deforming the shadow mask. (Spec., pg. 7, lines 5-7).

The second embodiment in the specification that describes preventing deformations of the shadow mask is found on pages 8 and 9, with reference to Fig. 6. In this embodiment, in addition to the slit located in at least one side of the frame, a flexible connection 51 is located at the ends of the side of the frame and connected to both the mask and the frame. (Spec., pg. 9, lines 1-2). As in the other embodiment, contracting, expanding, and bending of the frame is said to be accomplished without deforming the shadow mask. (Spec., pg. 9, lines 2-6).

In both embodiments, when the frame contracts, expands or bends, the shadow mask is not further deformed. Nothing disclosed in the specification purports to keep the shadow

mask from deforming as a result of uneven heating of the shadow mask itself. We interpret the functional language of preventing deformations of the shadow mask to mean those deformations caused by interaction with the support frame, not including the inherent deformations of the shadow mask due to uneven heating. The latter is described, on page 1 of the specification. Temperature increases at the edge of the shadow mask are smaller than at the center of the mask, which results in bulging of the mask. (Spec., pg. 1, lines 17-19).

The examiner rejected claim 13 as being anticipated by Ragland. The examiner suggests that the term “preventing” may be broadly interpreted to mean “impeding” or “reducing” and therefore concludes that Ragland’s frame functions to “impede” or “reduce” deformations of the shadow mask. (Answer, pgs. 10-12). The examiner further reasons that the functional limitation of preventing deformations of the shadow mask may be broadly interpreted to mean that any corrective distortion of the shadow mask would meet the means for preventing deformations of the shadow mask. (Answer, pg. 12). We disagree with the examiner.

Ragland discloses embodiments for correcting doming problems which result from uneven thermal heating of a shadow

mask. In one embodiment, the shadow mask includes a skirt which has associated with it a different coefficient of thermal expansion than the main portions of the mask. Considering the skirt as the equivalent to a support frame, it is clear that expansion or contraction of the skirt upon heating causes deformation of the overall mask. (Ragland, column 3, lines 12-17, and lines 29-37). In another embodiment, the frame attached to the shadow mask has associated with it a different coefficient of thermal expansion than the mask. Upon heating, the frame's movements result in deformation of the mask. (Ragland, column 4, lines 45-57).

Specifically in both embodiments, the shadow mask deforms or distorts as a result of interaction with the skirt or frame. Ragland states in column 3, lines 29-37, that when the mask heats up, the corners of the mask rise in the +Z direction, as the rest of the mask goes down in the -Z direction.

In the claimed invention, upon heating, the difference in thermal expansion between the frame and the mask cause the frame to bend, however, the bending of the frame does not cause further deformation of the mask. (Spec., pg. 7, lines

6-7 and pg. 9, lines 5-6). Clearly, Ragland's shadow mask is deformed when the frame or skirt expand, bend, or otherwise react to thermal increases. Accordingly, in Ragland, the function of preventing deformations of the shadow mask is not performed.

The examiner would further urge us to read "preventing deformations" as any corrective action which results in the overall reduction of deformations. (Answer, pg. 12). The examiner has interpreted the claim to mean, that inherent deformations of the mask corrected by further deforming the mask results in overall prevention of deformation. However, the specification regarding the two embodiments which describe preventing deformations of a shadow mask does not suggest deforming the mask to correct inherent deformations. In light of the specification, we do not regard the examiner's view as a reasonable interpretation of the appellants' claim.

For these reasons, we sustain the rejection of claim 13 under 35 U.S.C. § 102(b) as being anticipated by Ragland.

The remaining claims were rejected based on obviousness under the assumption by the examiner that Ragland discloses an apparatus which prevents deformations of a shadow mask. As stated above, we disagree with the examiner that Ragland

teaches this function. Therefore, the rejection of the remaining claims under 35 U.S.C. § 103 cannot be sustained.

Conclusion

The rejection of claims 14-22 under 35 U.S.C. § 112, second paragraph is reversed.

The rejection of claim 13 under 35 U.S.C. § 102(b) as being anticipated by Ragland is reversed.

The rejection of claims 14-17, 21, 23 and 24 under 35 U.S.C. § 103 as being unpatentable over Ragland is reversed.

The rejection of claims 18-20 and 22 under 35 U.S.C. § 103 as being unpatentable over Ragland in view of Morrell is reversed.

REVERSED

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Administrative Patent Judge)
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